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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,457	10/16/2003	Yuan-Jui Ho	BHT-3244-4	5424

7590 07/11/2005

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/685,457

Applicant(s)

HO, YUAN-JUI

Examiner

Rodney G. McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

Claim 1 is objected to because of the following informalities:

Claim 1, line 5, "a electrical field" should be "an electrical field".

Claim 1, line 5, "a inner" and "a outer" should be "an inner" and "an outer".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 2, "the mechanical structure" lacks antecedent basis.

Claim 1, line 3, "the assistant magnetic field" lacks antecedent basis.

Claim 1, line 5, "the cathode" lacks antecedent basis.

Claim 1, line 8, "the bombardment electrical particles" lacks antecedent basis.

Claim 1, line 11, "the position" lacks antecedent basis.

Claim 1, lines 13 and 14, "interfere the assistant" is unclear. This should be "interfere with the assistant".

Claim 1, line 14, insert the word "and" before "the bombardment" for clarity.

Claim 5, lines 2 and 3, change the phrase "by the permanent magnet" to "of permanent magnet material." for clarity.

Claim 6, lines 2 and 3, change the phrase "by the temporary magnetism material" to "of a temporary magnetism material."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Arita (U.S. Pat. 4,964,968).

Regarding claim 1, Arita teach a cathode structure for a vacuum sputtering machine. (See Abstract) As is known the cathode structure is connected to the vacuum sputtering machine for coating substrates. (Column 1 lines 12-30) Now to the discussion of Arita's cathode structure. Arita teach in Fig. 1 an assistant magnetic structure made up of inner magnetic pole 2 and outer magnetic pole 3. A coil 4 for is located for generating the magnetic field. (Column 3 lines 66-68; Column 4 lines 1-4) A target 1 is present. (Column 3 line 67) The target can be connected to a backing plate (i.e. cathode) above the poles. (Column 2 lines 58-62) The target 1 has an inner side surface and an outer side surface where the inner side surface faces the assistant magnetic field generating device. (See Fig. 1 for example) The outer side surface as is known in sputtering operations faces electrical particles for sputtering articles. (Column 1 lines 25-30) Arita teach utilizing an interference magnetic strip in the form of a soft magnetic material between the target bar 1 and the assistant magnetic field generating device 4. (See Fig. 1; Column 4 lines 5-25) The effect of the magnetic interference strip is that it produces a more uniform erosion across the targets surface. (i.e. ions

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bombard the target more uniformly leading to a more uniform film.) (Column 4 lines 36-39)

Regarding claim 5, the interference magnetic strip can be of permanent magnet material. (Column 4 lines 54-57)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arita (U.S. Pat. No. 4,964,968) in view of Deppisch et al. (U.S. Pat. 4,652,358).

Arita is discussed above and all is as applies above. (See Arita discussed above)

The differences between Arita and the present claims is that a connection carrier plate being positioned between the target bar and the assistant magnetic field generating device, and the interference magnetic strip being installed in the connection carrier plate is not discussed (Claims 1 and 2)

Deppisch et al. teach a connection carrier plate 3 positioned between target plate 12 and a magnetic assistant structure 6. (See Figure 2; Column 3 lines 62-65; Column 4 lines 3-19) Strips 13 of ferromagnetic material are inserted into the carrier plate 3. (Column 4 lines 20-25)

The motivation for utilizing a connection carrier plate positioned between the target bar and the assistant magnetic field generating device is that it allows for direct coupling of the magnetic flux produced by the magnet system. (Column 2 lines 57-59)

The motivation for installing the interference magnetic strips in the connection carrier plate is that it allows for sputtering the target at a high rate. (Column 3 lines 21-25)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Arita by utilizing a connection carrier plate positioned between the target bar and the assistant magnetic field generating device and installing interference magnetic strips in the connection carrier plate as taught by Deppisch et al. because it allows for direct coupling of the magnetic flux produced by the magnet system and for allowing sputtering of the target at high rate.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arita in view of Deppisch et al. as applied to claims 1 and 2 above, and further in view of Lannutti et al. (U.S. Pat. 5,282,943).

The difference not yet discussed is the use of an indium connection structure placed between the target bar and the connection carrier plate.

Regarding the use of an indium connection structure placed between the target bar and the connection carrier plate, Lannutti et al. teach joining a target to a backing plate (i.e. connection carrier plate) through a layer of In solder. (Column 2 lines 55-65)

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The motivation for utilizing an indium connection structure placed between the target bar and the connection carrier plate is that it allows for solving the adhesion problems of the past. (Column 2 lines 9-21)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized an indium connection structure placed between the target bar and the connection carrier plate as taught by Lannutti et al. because it allows for solving the adhesion problems of the past.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arita in view of Deppisch et al. as applied to claims 1 and 2 above, and further in view of Wada et al. (Japan 02-285069).

The difference not yet discussed is where an elastic fastening mechanism is utilized to fasten the target bar to the connection carrier plate.

Regarding the use of an elastic fastening mechanism is utilized to fasten the target bar to the connection carrier plate, Wada et al. teach a spring member (i.e. elastic member) for fastening the target to a connection carrier plate. (See Figs. 1 and 2; Abstract)

The motivation for utilizing an elastic fastening mechanism to fasten the target bar to the connection carrier plate is that it allows for easy replacement of a target. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized an elastic fastening mechanism for

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fastening the target bar to the connection carrier plate as taught by Wada et al. because it allows for easy replacement of the target.

Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arita (U.S. Pat. 4,964,968) in view of Morrison, Jr. (U.S. Pat. 4,265,729).

Arita is discussed above and all is as applies above. (See Arita discussed above)

The difference between Arita and the present claims is where the interference strip is made of a temporary magnetism material.

Morrison, Jr. teach utilizing an iron shunt for affecting a magnetic field (Column 10 lines 54-55) or using ferrite material (an oxide magnetic material) for shaping the magnetic field. (Column 11 lines 3-26)

The motivation for utilizing a temporary magnetism material is that it allows for shaping the magnetic field. (Column 11 lines 3-26)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Arita by utilizing a temporary magnetism material as taught by Morrison, Jr. because it allows for shaping the magnetic field.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
July 7, 2005